

REMARKS / ARGUMENTS

The action by the Examiner in this application, together with the references cited by him have been given careful consideration. Following such consideration, claims 1, 3, 4, 6, 7, 10, 11, 13, 15-17, 26, 27, 29 and 31 have been amended, and claims 28 and 32 have been canceled. Claims 2, 5, 8, 9, 12, 14, 18-25 and 30 remain unchanged. It is respectfully requested that the Examiner reconsider the claims in their present form, together with the following comments, and allow the application.

The Applicant acknowledges the Examiner's indication that claims 6, 7, 12-23 contain allowable subject matter. In response to the Examiner's comments, claims 6, 7, 11, 13, 15 and 17 have been placed in independent form to include the limitations of the base claim and any intervening claims. It is believed that the amendments place claims 6, 7 and 12-23 in condition for allowance.

The remaining claims are directed to a method of forming a microporous fluoropolymer, such as, polytetrafluoroethylene (PTFE) material, sheet or film. In this respect, independent claims 1 and 27 have been amended to identify a method of forming a microporous polytetrafluoroethylene (PTFE) sheet or a polytetrafluoroethylene (PTFE) material. The method includes irradiating the material with *electrons* at dosage levels below the rupture energy of the carbon-to-fluorine (C-F) bonds, but sufficient to rupture carbon-to-carbon (C-C) bonds. The *entire* sheet or material of polytetrafluoroethylene (PTFE) is exposed to an etchant sufficient to etch away disrupted atoms or molecules wherein continuous micropassages are formed through the sheet or material.

It is respectfully submitted that none of the cited references alone or together, teaches, suggests or shows the claimed methods. Independent claims 1 and 27 stand rejected under 35 U.S.C. Section 102(b) and 103(a) as being anticipated, or in the alternative, obvious in view of U.S. Patent No. 5,066,565.

The '565 patent relates to a method of chemically etching the surface of a polytetrafluoroethylene (PTFE) material by exposing the surface of the material to ionizing radiation that causes branching and/or cross-linking of the polymer chains along the surface or in the volume of the article that is exposed. The '565 patent teaches a method of improving the surface adhesion of polytetrafluoroethylene (PTFE). It is respectfully submitted that the '565 patent does not teach, suggest or show a method of forming a microporous polytetrafluoroethylene (PTFE) by irradiating a material at a specific dosage level, namely, below the rupture energy of the carbon-to-fluorine (C-F) bonds, but sufficient to rupture the carbon-to-carbon (C-C) bonds. Moreover, it does not teach, suggest or show exposing the *entire* sheet or material of polytetrafluoroethylene (PTFE) to an etchant to form continuous micropassageways through the sheet or material. For the foregoing reasons, it is respectfully submitted that claims 1 and 27 are not anticipated or obvious in view of the '565 patent.

Claims 1 and 27 also stand rejected under 35 U.S.C. Section 103(a) as being unpatentable over U.S. Patent No. 6,565,764 to Hiraoka et al. in view of U.S. Patent No. 4,956,219 to Legras et al. The '764 patent discloses a method of manufacturing material having a fine microstructure, but is specifically directed to a block copolymer or a graft copolymer having two

or more phases. This is in contrast to the present invention that is specifically directed to a homopolymer, i.e., TEFLON® (polytetrafluoroethylene (PTFE) material).

The '219 reference discloses a method of producing perforations in a sheet material. According to the disclosure in the '219 patent, the sheet material "is bombarded with strongly ionised, accelerated heavy ions 3 ["3" (See FIG. 1) refers to the ion beam] having an energy of the order of 2 Mev per nucleon." (See column 3, lines 51-53). In this respect, the '219 patent teaches the use of ions, namely an atom or a group of atoms that has lost one or more electrons, or has gained one or more electrons. The patent thus teaches the use of the nuclear structure, including the dense nucleus of protons and/or neutrons that may include surrounding electrons. The present invention, on the other hand, utilizes electrons only. In this respect, the mass of electron, compared to the nuclear structure of an atom is significantly smaller and produces a significantly different impact with the target material. A heavy ion accelerated through material will be influenced less by the polymer material as compared to electrons directed to the same material. It is respectfully submitted that the '219 reference does not teach, suggest or show the use of electrons in forming micropassages through a polymeric material.

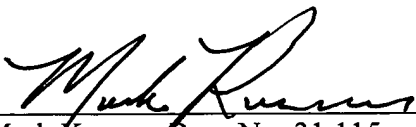
The Examiner has also rejected claims under 35 Section 103(a) as being unpatentable in view of the '565 reference to Martinez et al. in view of the '219 patent to Legras et al. As noted above, the '565 reference discloses a surface treatment for roughening the surface of polytetrafluoroethylene (PTFE). It is respectfully submitted that the '219 patent does not teach, suggest or show the method of forming microporous TEFLON® as presently set forth in the claims, and that the teachings of the '219 patent, wherein heavy ions are used to perforate a

material, add nothing to the '565 patent relating to roughening the surface of a TEFLON® material. It is respectfully submitted that only with the benefit of hindsight would one look to a patent teaching perforating a polymeric material with heavy ions, and combine it with a patent that teaches surface roughening of polytetrafluoroethylene (PTFE). Even then, the combination does not teach, suggest or show the use of electrons to form micropassages through a polytetrafluoroethylene (PTFE) material.

For the foregoing reasons, Applicants respectfully submits that the cited references do not teach, suggest or show the claims in their present form. Favorable action is therefore respectfully requested.

Respectfully submitted,

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I hereby certify that this correspondence (along with any paper referenced as being attached or enclosed) is being deposited on the below date with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to MAIL STOP AMENDMENT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Date: April 27, 2005


Christine Goellner